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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,070	03/25/2004	Sudhanshu Misra	577182000100	3538
25226	7590	02/21/2006	EXAMINER	
MORRISON & FOERSTER LLP			RACHUBA, MAURINA T	
755 PAGE MILL RD			ART UNIT	
PALO ALTO, CA 94304-1018			PAPER NUMBER	
			3723	

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

SP

Office Action Summary	Application No. 10/810,070	Applicant(s) MISRA ET AL.	
	Examiner M Rachuba	Art Unit 3723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25-29 is/are allowed.
- 6) ☒ Claim(s) 1-5, 14, 15, 30 and 31 is/are rejected.
- 7) ☒ Claim(s) 6-13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/16/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of species 1 in the reply filed on 07 December 2005 is acknowledged. In accordance with the interview summary mailed 21 November 2005, the examiner agrees that claims 1, 16 and 25 are generic, and that claims 1-31 read on the elected species.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5, 15, 30 and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Drill et al, US006572439B1. '439, figure 8 and its description, discloses a method of customizing a polishing pad, and a polishing pad, for chemical mechanical planarization of a substrate, the method comprising: obtaining one or more characteristics of a structure on a substrate (step 802); and selecting a value for one or more chemical or physical properties for a pad to be used in chemical mechanical planarization of the substrate based on the obtained one or more characteristics of the structures on the substrate (step 803, where the pad has a degrees of hardness designed to achieve a predetermined polishing effect). The one or more characteristics

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of a structure includes film material and a number of different materials. The one or more chemical or physical properties for a pad include pad hardness. The substrate is a ceramic substrate that has integrated circuit devices on its surface. The pad has one or more chemical or physical properties, wherein a value for the one or more chemical or physical properties is selected based on one or more characteristics of the work.

See column 4, lines 44 through column 5, lines 22; column 6, lines 5 through column 7, lines 20; column 8, lines 13-32; and column 9, lines 20 through column 10, lines 7.

Regarding claim 31, MPEP 2113 states in part "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Here, the resultant pad is the same as that disclosed by '439, regardless of how the properties of the pad are determined.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Drill et al, '439 in view of Misra et al, US2002/0115385A1. '439 does not disclose that the structure is an optoelectronic device. '385, [0057]-[0058] teaches that optoelectronic devices are typical integrated circuit devices that are subjected to CMP processing. It would have been obvious to one of ordinary skill to have provided '439 with the optoelectronic device taught by '385, as one of many old and well known integrated circuit devices that can be planarized.

Allowable Subject Matter

7. Claims 25-30 allowed.

8. Claims 6-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose or fairly teach: A method of customizing a polishing pad for chemical mechanical planarization of a semiconductor wafer, the method comprising: obtaining one or more characteristics of a chip;

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performing a simulation of a chemical mechanical planarization of the wafer with a model of a CMP process using the obtained one or more characteristics of the chip and a range of values for the one or more chemical or physical properties of the pad; and selecting a value for one or more chemical or physical properties for a pad based on the simulation; or a method of customizing a pad used in chemical mechanical polishing to planarize a metal or dielectric film comprising selecting a value for one or more chemical or physical properties of the pad to compensate for pattern density effects of the different chip or substrate architectures and optimizing the pad for a derived planarization length, response characteristics for dishing and/or erosion, or final step height at specific pattern features to attain local and global planarization of the chip or substrate. The applied art to Drill et al, '439, teaches pre-selecting a desired effect based on the architecture of the substrate, and customizing a polishing pad to achieve that effect by selecting a range of hardness for the pad. '439 does not disclose performing a simulation of the CMP of the wafer to determine the value of the properties of the pad based on input of chip or substrates characteristics into the simulation, or using pattern density effects to customize a pad. While CMP simulation and modeling are known to those of ordinary skill in the art, to determine slurry characteristics, wafer planarization end point, contact force or processing times, (see applicant's submitted prior art, filed 16 September 2004, for various papers discussing various modeling techniques), the prior art of record does not disclose or fairly teach modeling the planarization process to optimize and customize a polishing pad based on work features or architecture. See for example Runnels, US006889177B1, for a discussion of

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modeling using the contact force between the work and polishing pad, but not for optimizing and customizing the pad based on features of the work.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Other modeling or simulation of polishing processes are cited of interest.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M Rachuba whose telephone number is 571-272-4493. The examiner can normally be reached on Monday-Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 571-272-4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M Rachuba
Primary Examiner
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